Ag20/20 Beltsville Workshop
Draft

I.   Background

On November 29 and 30, 1999 representatives from NASA, USDA, National Cotton Council, National Association of Wheat Growers, American Soybean Association, and National Corn Growers Association met in Beltsville, Maryland to continue the development of Ag20/20. This workshop was a follow-on activity to the August 12 and 13, 1999 meeting at Stennis Space Center where the above organizations met to baseline grower information needs that could be addressed with remote sensing and other geo-spatial technologies. The results of the August meeting were documented in the Ag20/20 Program Concept Paper dated September 9, 1999.

II.   Workshop Focus

At Beltsville five case studies (insecticide applications, soil characterization, irrigation management, nutrient stress, and yield estimation) were presented to growers to demonstrate current state of knowledge in applying remote sensing to grower information needs previously identified at the August meeting. This led to discussions concerning what could be applied in the near future to help producers and where exist gaps that need to be addressed in future research and education efforts. The primary outcome of the workshop was grower input regarding application areas and site locations for conducting large-scale field tests of remote sensing based techniques starting in 2000.

III.   Large-Scale Tests

The following presents what each commodity group presented for consideration in conducting large-scale tests beginning in 2000 growing season.

A. Cotton

   1. Test Sites
       - Lemooe, CA   -   Ted Sheely farm
       - Clarksdale, MS   -   Perthshire Farms
       - Sylvania, GA   -   Joe Boddifard farm

- Newellton, LA   -   Jay Hardwick farm
- Texas   -   TBD

2. Test Characteristics:
- Implement "whole farm approach", not field by field or subset of crop types
- Define economic assessment, education, and extension approach at beginning
- Truly collaborative project (partnership) with state cotton producer group a key partner
- Irrigation, insect management and other identified requirements would be large scale test candidates on above sites

B. Corn & Soybeans

1. Test Sites
- Lincoln, Nebraska
- Urbana, Illinois
-         , Iowa
-         , Indiana
-         , Virginia
-         , Michigan
- Mid-South area
- Beltsville, Maryland

2. Test Characteristics:
- In season (weekly) target areas for managing stress due to weeds, nutrients (major driver) and water (irrigated cropland)
- Next season target areas for future planning include nutrients soybean cyst, water stress (shortage), compaction, bare soil characteristics for soil sampling prior to planting.

C. WHEAT

1. Test Sites
- Rupert, Idaho
- Havre, Montana
- TBD, Alabama
- TBD, Georgia
- TBD, North Carolina

2. Test Characteristics:
- Each project must have well defined hypothesis

- (Spring Wheat) Montana effort would leverage with 3 years of work in protein assessment and incorporate remote sensing to determine its utility in mapping protein variability zones within a field
- (Spring Wheat) Idaho effort has three proposed thrusts
  - Access use of remote sensing maps to help identify sodic and calcareous soils
  - Test traditional, conditional, and remote sensing methods for assisting in P & K management in crops
      - Utility of remote sensing to help map high/low nitrogen levels during growing season to support management plans for next year's crop

Each of above efforts could be implemented on 4 to 6 locations where each location has different soil type

- (Winter Wheat) Southeastern U.S. effort has two proposed thrusts
  - early season imagery to map stand density to guide top dressing of nitrogen
  - use of remote sensing to help define both the time and amount of nitrogen application

Above effort could be implement on a site in Alabama, Georgia, or North Carolina where each farm field has a 3 to 5 year history

IV. Guidelines for Large Scale Test Selection in 2000

The following have been identified as critical guidelines that must be followed in developing and implementing any large scale test, irrespective of crop type, test location, or application being tested.

- Technique(s) used must rely heavily on remote sensing
- Utilize imagery that is either currently available or will soon be available on commercial basis
- Any hyperspectral data would be for research and next generation of products
- Design test so that a traditional vs remote sensing comparison can be made
- Design test so that an economic analysis can be done
- Specific hypothesis with metrics
- Project team must have equipment available on-site (ex: GPS, yield monitor, variable rate application equipment)
- Field(s) selected for test should be available under similar conditions for a 2-3 year demonstration phase

V.   Test Teams

Each large-scale test developed and conducted in 2000 will require a project team that is responsible for all aspects of the test. The following expertise and personnel must be assembled for implementing each test:

- Identified project manager
- Identified commodity association liaison
- Grower/producer
- Agronomic expertise
- Identified person or group to extend results and educate others
- Image/data analyst
- Field crew

It is anticipated that project managers for 2000 will be affiliated with either NASA or USDA.

VI.   Next Steps

During December USDA and NASA will identify what large-scale tests can be conducted in 2000. Only a subset of tests can be implemented in the upcoming growing season. NASA and USDA will develop and conduct these tests using existing resources; therefore some reallocation of current resources will have to occur. A plan identifying recommended large-scale tests, resource requirements, site locations, test teams, and other pertinent information will be written and presented to the Ag20/20 Program Management Council meeting which will occur at the ERIM Second International Conference on Geospatial Information in Agriculture and Forestry, Orlando, Florida during January 10 – 12, 2000. Large-scale tests approved by the Council will be implemented during the 2000 growing season.